CHAPTER 4. RESEARCH DESIGN AND METHODS

The research design employed for this project is intended to provide reconnaissance-level data on the environmental setting of the project and to identify and document cultural resources which may be affected by the proposed activities on the project. Further, considering the historic nature of Kelleys Island and the actions by the Village of Kelleys Island to preserve this heritage, special attention is given to identified historic structures that have hitherto been undocumented.

LITERATURE SEARCH

A literature search was conducted prior to the field survey to: (1) identify any previously recorded cultural resources located in the vicinity of Long Point and the adjacent nearshore areas of Lake Erie, (2) identify any cultural resource investigations that had transpired in the vicinity, and (3) provide information on the expected types of prehistoric features or artifacts and historic structures of Kelleys Island. The literature search included a review of the Erie and Ottawa Counties archaeological and historical inventory files and maps, county histories and atlases, island history resources, and western Lake Erie references.

For potential submerged cultural resources, a list of vessels lost at or near Kelleys Island, Ohio, was compiled from numerous published professional and popular sources (Mansfield 1899, Bowen 1952, Hamilton et al. 1966, Metzler 1978, Ackerman 1990, Douglas et al. 1994, Herdendorf 1999, Swayze 1999, Wachter and Wachter 2001, Runge n.d., and Wright n.d.) and from the Lake Erie Shipwreck Database, maintained by the Great Lakes Historical Society in Vermilion, Ohio, and supplemented with additional materials held in the files of EcoSphere Associates of Sheffield Village, Ohio. Table 4-1 contains an alphabetic listing of 65 shipwrecks and reported wrecking events for the waters surrounding Kelleys Island during the period 1837 to 1954.

ASSUMPTIONS

The basic assumptions of the archaeological survey, based on previous investigations in the general vicinity of the Predevelopment, Ltd. property (Mills 1914; Prahl 1974; Krebs 1980; Pape 1988,1989; Myers et al. 1992; Labadie and Herdendorf 1998,1999, 2004a,b; Grooms and Bergman 2001; Herdendorf et al. 2002) are that: (1) prehistoric artifacts, earthworks, or other prehistoric remains may be present on the property, (2) the remains of historical structures may be present on the property, and (3) shipwrecks or other submerged cultural artifacts may be present in the nearshore waters of Lake Erie that front the property.

PROBABILITY OF SUBMERGED RESOURCES

SUBMERGED PREHISTORIC SITES

With the exception of the work done by Stothers and Abel (2001) in the Sandusky Bay region, archaeologists have paid little attention to the possibility of underwater prehistoric sites in Lake Erie. Identifying a submerged prehistoric site presents a degree of difficulty that far exceeds that of a typical survey for historical features such a shipwreck or inundated harbor and port structures. However, given the present state of our knowledge relating to past climate trends, lake level fluctuations, former shoreline positions, and early human migrations into the region (as discussed earlier in this report), and based on our understanding of the types of terrain preferred, utilized, or required by these cultures, it is possible to recognize certain features on the lakefloor which may hold promise as prehistoric occupation sites.

Considering the time period when Lake Erie water levels were low enough to expose islands and peninsulas (Figures 2-8 and 2-9), Paleo-Indian and Archaic cultural complexes are the most likely ones to occur offshore. Based on what has been observed at upland sites near the Lake Erie shoreline, bathymetric maps, side-scan sonar records, and fathograms were scrutinized for the following types of natural terrains: (1) former shorelines, particularly those with irregular configurations which may represent embayments that

TABLE 4-1. ALPHABETIC LISTING OF VESSELS SUNK OR INVOLVED IN WRECKING EVENTS IN THE VICINITY OF KELLEYS ISLAND, OHIO

Vessel	Type	Date	Event	Disposition
ADVENTURE	steambarge	Oct 1903	burned, sank	lost
AMARETTA MOSHER	schooner	Nov 1902	stranded on reef, sank	lost
AMERICAN EAGLE	propeller steamer	May1882	boiler exploded	recovered
ARGO	barge, oil tanker	Oct 1837	foundered in storm	lost
ASHTABULA	schooner	Jun 1848	capsized	lost?
C. H. PLUMMER	schooner-barge	Nov 1888	burned, sank	lost
CLEVELAND	schooner	Jun 1844	sank	lost
CONSTITUTION	schooner	Sep 1906	sank	lost
CONSUELO	schooner	May1875	foundered	raised
EAGLE	scow	1867	aground, sank	lost?
EMORY FLETCHER	schooner	Apr 1850	sank	raised?
EMPIRE	bark	May 1857	wrecked in storm	lost
ERIE ERIE	schooner	Sep 1872	foundered	lost
EXCHANGE	schooner	Nov 1874	aground, sank	lost
F. C. CLARK		Nov 1874 Nov 1852	wrecked	lost?
	brig			
F. H. PRINCE	steamer dredge	Aug 1911	aground, burned	lost
FAIRY	scow schooner	1867	ashore	lost?
FLORENCE	schooner	Dec 1854	sank	lost
GALLATIN	schooner	Apr 1882	aground, foundered	lost
GEORGE DUNBAR	steambarge	Jun 1902	foundered in storm	lost
GOVERNOR PORTER	schooner	Jun 1853	sank	lost
GRAND ARMY REPUBLIC	scow schooner	Jul 1877	capsized	recovered?
GRAY GHOST	rum runner	1931	aground	lost?
H. D. ROOT	schooner	Apr 1894	sank	lost
H. P. BALDWIN	schooner	1883	sank	recovered?
HOMEN or HOME	schooner	Dec 1854	foundered	lost
HUGH COYNE	scow schooner	May1877	aground	lost
IRIS	scow schooner	1869	aground	lost
ISABELLA J. BOYCE	propeller steamer	Jun 1916	aground, burned	lost
ISLAND QUEEN	sidewheel steamer	Sep 1864	scuttled	raised
JOHN A. SAUNDERS	scow schooner	Nov 1879	stranded	recovered?
JOHN J. BARLUM	schooner-barge	Sep 1922	foundered	lost
JOHN MARK	schooner-barge	Oct 1903	sank in storm	lost?
JULIA WILLARD	schooner	Dec 1895	crushed by ice	lost
KEEPSAKE	scow schooner	Aug 1911	stranded on reef	lost
KELLEY ISLAND	steamer dredge	May 1925	foundered	recovered
KING SISTERS	schooner	Oct 1884	stranded, broke up	lost
L. B. CROCKER	schooner	Sep 1886	stranded, wrecked	lost
MARGARET OLWILL	propeller steamer	Jun 1899	sank in storm	lost
MARY ANN	scow schooner	Jun 1870	wrecked	lost
MAYFLOWER	scow schooner		sank	raised
MICHIGAN		Aug 1875 Dec 1888	burned	lost
	propeller steamer			
NORTHENER	propeller steamer	Nov 1886	burned	rebuilt
OAK VALLEY	schooner	1882	stranded	lost
ОНІО	tug	Jun 1954	collision	recovered

TABLE 4-1. ALPHABETIC LISTING OF VESSELS SUNK OR INVOLVED IN WRECKING EVENTS IN THE VICINITY OF KELLEYS ISLAND, OHIO (CONTINUED)

Vessel	Type	Date	Event	Disposition
POINT ABINO	steambarge	Dec 1899	stranded on reef	recovered?
Q. A. GILLMORE	schooner	Jun 1881	wrecked on reef	lost
RACINE	barge	1905	sank	lost?
RAINBOW	schooner	Aug 1837	sank	lost
REBECCA	schooner	1868	aground	recovered?
RELIEF	steam tug	Jul 1884	explosion, burned	lost
RUBY	sloop	unknown	sank	lost
SACRAMENTO	schooner	Oct 1867	wrecked on reef	lost?
ST. LOUIS	sidewheel steamer	Nov 1852	wrecked on reef	lost
STAR OF HOPE	schooner-barge	Oct 1886	stranded, broke up	lost?
TRADER	propeller steamer	May1886	ashore	recovered
UNCLE SAM	brig	Dec 1847	foundered	lost
UNCLE SAM	scow schooner	1880	stranded	recovered?
UNION STAR	scow schooner	Aug 1867	aground on reef	lost
VERNIE M. BLAKE	schooner	1871	sank	recovered?
W. R. HANNA	scow schooner	Oct 1886	foundered, broke up	lost
WANDERER	schooner	Apr 1873	sank	recovered?
WILLIAM MATTHEWS	scow schooner	1861	foundered	lost
WILLIAM CROSTHWAITE	schooner-barge	Sep 1906	sank	lost
YOUNG AMERICA	schooner	Aug 1880	foundered	recovered?

fostered marshlands, (2) deltas with branching distributaries, (3) estuarine tributaries, (4) intersections of entrenched tributaries that form high, triangular promontories, and (5) cliffs, hills, or mounds that offer a vista of the surrounding terrain. In addition to these natural topographic features, the records were analyzed for any evidence of culturally modified terrain, such as: (1) trenches in the vicinity of promontories, (2) regular-appearing terraces, and (3) graded plains and ridge tops. Although prehistoric sites may be present on the lakefloor, a low potential exists for the discovery of such sites in the study area based on the limitations of the existing survey technology.

SUBMERGED HISTORIC SITES

Table 4-1 contains list of reported shipwrecks and suspected wrecking incidents in the vicinity of Kelleys Island. Because of the imprecision of many of the reported locations, all of the waters surrounding the island were considered for the list. The probable position for events, where a location was recorded, are shown on Figure 4-1.

Of the 65 vessels reported, 28 vessels (43%) were wrecked by running aground, striking reefs, being stranded, or otherwise being blown or washed ashore. This is the most common reason for vessel loss and the most prevalent areas are the northern shores of the island and the reefs. The next most common reason, 12 vessels (18%), appears to be storms that cause vessels to break up, capsize, or otherwise founder offshore in the open lake. Fires and explosions, often associated with poor weather conditions, account for the loss of 8 vessels (12%). Collisions and rammings or being scuttled caused 3 vessels (5%) to be lost. In addition to these causes an additional 14 vessels (22%) sank for which the reason for the loss is not available. Of the 65 wrecking incidents, 18 (28%) of the vessels are believed to have been raised or in some way recovered.

Documentation of these vessels can add significant information on the maritime development of the region (Muckelroy 1978, Herdendorf 1994). Shore-based maritime, commercial, and industrial activities, as discussed earlier in this report and by Hatcher (1945), may also be expected to yield submerged cultural resources in shallow water. For example, Hills (1925:124) in referring to Long Point reports: "In the very early days, James Watkins had lived on the point and had burned lime in a small way.

The ruins of his little kiln is still there over grown by vines and bushes. It is near the west shore, about 2,000 ft from the North end of the point." Therefore, a moderate potential exists for the occurrence and discovery of historic cultural resources, especially shipwrecks, within the proposed study area.

FIELD METHODS

LAND SURVEYS

The entire land area of Kelleys Island is listed on the National Register of Historic Places (Pape 1988). Kelleys Island has a noteworthy history of prehistoric and historic occupation. Kelleys Island is well known for its prehistoric attributes, including aboriginal: (1) habitation sites, (2) enclosed villages, (3) earthworks, (4) petroglyphs, (5) burial mounds, and (6) isolated artifacts. A Phase I Cultural Resources Survey of the Long Point, LLC property (immediately to the north of the Predevelopment, Ltd. property) by BHE Environmental in November 2001 (Grooms and Bergman 2001), failed to identify any prehistoric features on the Long Point, LLC property or nearby properties. Prehistoric lithic scatters have been reported for small sites on Long Point outside the Predevelopment, Ltd. property (Krebs 1980); these include two small habitation sites, Thomas Jones Site #1 (33ER101) and Thomas Jones Site #2 (33ER102) the first at the northern tip of the point and the second on the opposite shore (southeast) from the proposed docking facility (Figure 4-2).

The only land areas that will be disturbed by the proposed project will be the 0.4-acre (0.16 ha) Building Envelope polygon at the northern extremity of the property and small areas of bedrock where the docking facility connects to the shore, as well as a new access point from Long Point Lane to the old shoreline road (Figures 1-2 and 1-3; Plates 2 and 3). This new connection replaces the old one near the Lincoln House foundation and the Lincoln Stone Wall, which will be abandoned for vehicular traffic.

Within the Building Envelope a Phase I Cultural Resources Survey was conducted. Because of the dense ground cover of garlic mustard (*Alliaria petiolata*) and smooth sweet cicely (*Osmorhiza longistylis*), shovel test holes were excavated. The general plan was to establish a 32.8-ft (10-m) grid throughout the polygon, resulting in 23 test holes (Figure 4-3). The soil from each of the 50-cm test holes was screened and all

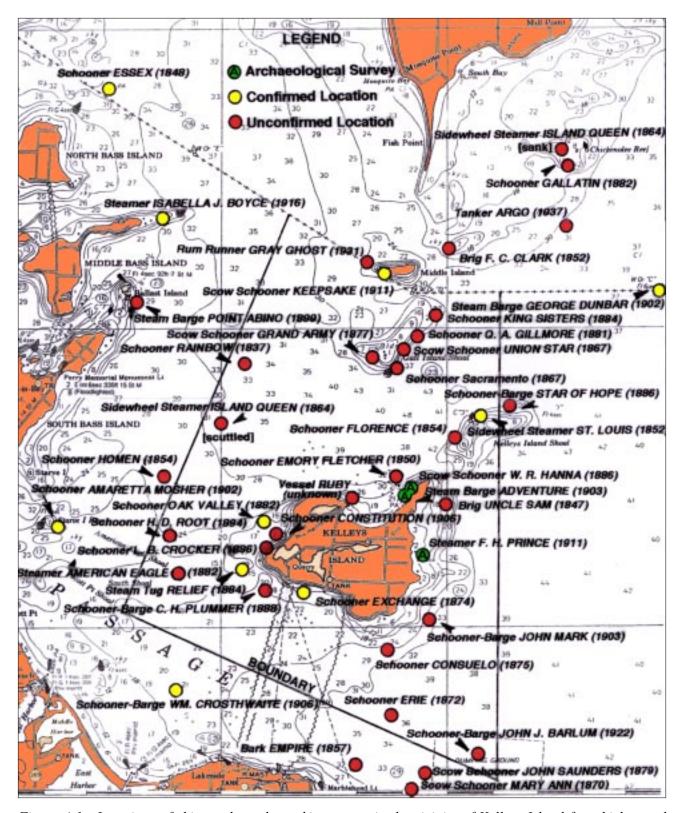


Figure 4-1. Locations of shipwrecks and wrecking events in the vicinity of Kelleys Island for which vessel positions have been reported, showing boundary of Kelleys Island Harbor Line and proposed underwater preserve (base map NOAA Chart No. 14842, May 1986).

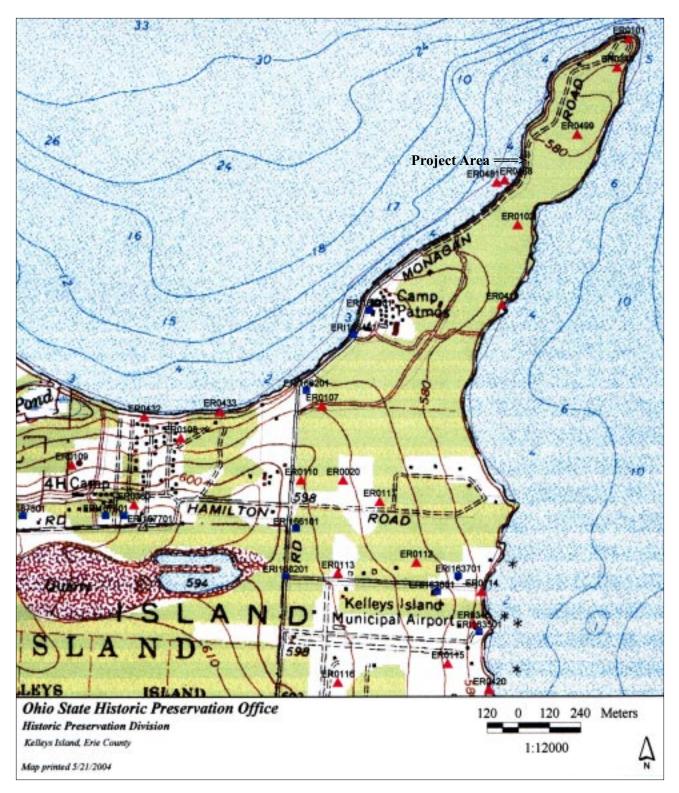


Figure 4-2. Topographic map of Long Point on Kelleys Island, showing location of archaeologic and historic sites (Ohio Historic Preservation Office, May 2004).

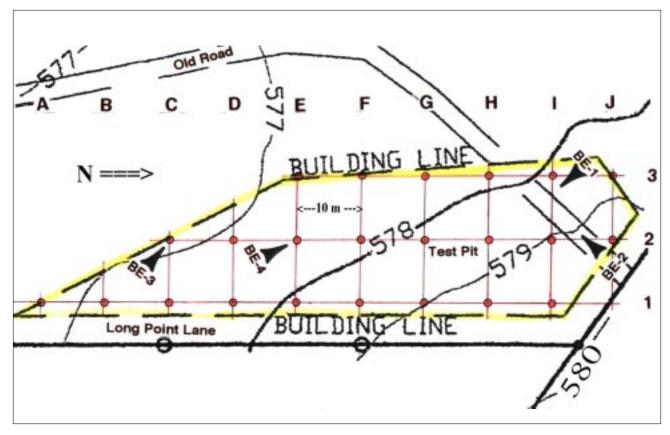


Figure 4-3. Map of the Building Envelope, showing location of shovel test pits and Appendix B photographs.

suspected cultural materials were tagged and retained for further analysis and identification. Photographs of the Building Envelope area are included in Appendix B (designated by the prefix BE). The orientation of the photographs is indicated on Figure 4-3.

Several known historic structures are located on the Predevelopment, Ltd. property or in close proximity. On the property, historic structures include: (1) the Lincoln House foundation and cistern and (2) a low, limestone wall—known as the Lincoln Stone Wall (ERI-1664)—which runs 720 ft (221 m) parallel to the shore along the old shoreline road (Figure 4-4). Historical structures on adjacent properties include: (1) continuation of the Lincoln Stone Wall to the southwest on property owned by the Cleveland Museum of Natural History and others, (2) an early 20th century cistern, which may have been associated with the Lincoln House, on the boundary of the Predevelopment, Ltd. and the Cleveland Museum of Natural History properties, and (3) Watkins House (33ER499) on property owned by the Long Point, LLC, north of Predevelopment, Ltd. property. Photographs of historic sites are included in Appendix C.

For the remaining approximately 6.1 acres 2.5 ha) of the property, external to the Building Envelope, a visual inspection was performed using a systematic approach to adequately determine the existence of cultural surface features. Detailed information was gathered to further document the Lincoln House foundation and associated features (15 shovel test pits), the Lincoln Stone Wall, and the isolated cistern (4 shovel test holes). Area sweeps with a Fisher model 1225-X metal detector were used at the historic sites to select a portion of the test holes, others were selected at random. No additional prehistoric features or historic structures were identified on the property.

Based on an analysis of: (1) the historic and prehistoric attributes of the property, (2) the proposed construction of the seasonal lodge and associated appurtenances, (3) projected use of the land-based structures, and (4) access to them, an assessment was made as to the effects and/or impacts of the proposed project on the archaeological resources of the property and the surrounding area.

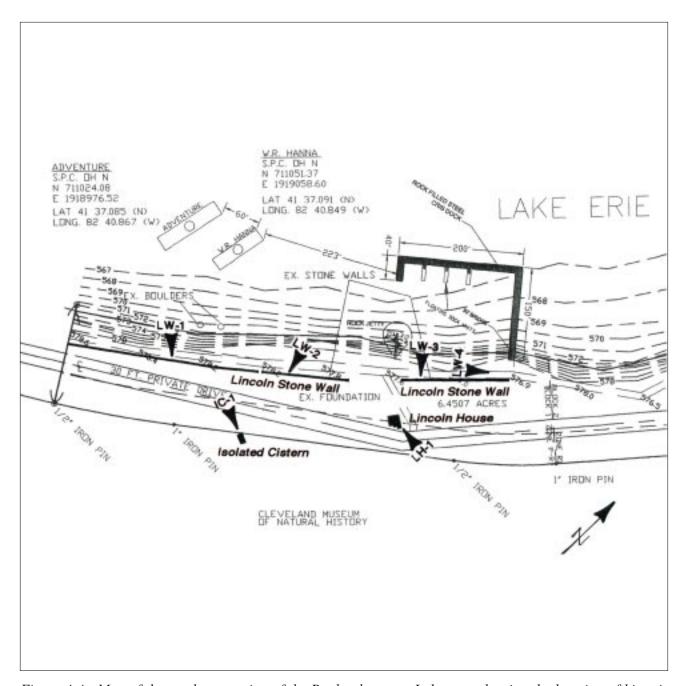


Figure 4-4. Map of the southern portion of the Predevelopment, Ltd. tract, showing the location of historic features and Appendix C photographs.

UNDERWATER SURVEY

Two historic shipwrecks are known for the waters of Lake Erie immediately offshore of the property: (1) the steambarge *ADVENTURE* (33ER481) and (2) scow schooner *W. R. HANNA* (33ER488). These vessels lie within about 200 ft (60 m) of the shore near the southwestern end of the property. At one time the State of Ohio proposed the creation of an underwater

preserve that would have included these vessels and the entire underwater area surrounding Kelleys Island. Based on objections from the public and the local government, plans for the preserve designation have been abandoned. No other submerged cultural resources are known in the vicinity of the property.

The objectives of the underwater survey are to: (1) determine the presence, if any, of any submerged cultural resources within 300 ft (90 m) of the property

shore, (2) document and map the location of any previously unknown submerged cultural resources, (3) characterize the geological, physical, and biological setting of Lake Erie adjacent to the property, and (4) assess the anticipated effects and/or impacts of the proposed docking facility on known or newly discovered shipwrecks and other submerged cultural resources.

The underwater survey was conducted using standard diving techniques along a series of surveyed transect lines. The transect lines were established shorenormal and extend approximately 300 ft (90 m) out into the lake from a baseline established along the shore (Figure 4-5). The baseline was established along the crest of the storm berm at an elevation of approximately 578 ft (176 m). The transect lines were spaced every 50 ft (15 m) in the vicinity of the docking facility and 100 ft (30 m) for the remainder of the shore that fronts the property. Additionally, three longitudinal transects parallel to the shore were surveyed at 100 ft (30 m) intervals offshore. Photographs of the shoreline at the transect lines are included in Appendix D.

The shore baseline was established by starting at the south end of the property and taping northward, with a hub set at every transect line intersection. From these hubs, a floating, yellow tag-line (marked at 20-ft intervals (6 m) was unreeled from the shore to 300 ft (60 m) offshore in a direction perpendicular to the baseline and anchored at the lakeward end where a marker buoy was placed. As the survey progressed, "Diver Down" buoys with dive flags were positioned in the work area. Observations of bottom material types, aquatic vegetation, fish and other fauna, and submerged cultural resources were made by the diver as each transect line was traversed. A small boat was used to transport a recorder along each of the lines so that the diver could immediately report observations and location information. Periodically the diver would bring bottom material, vegetation, and fauna samples to the surface for inspection and description by the recorder. Dive-knife penetrations were the primary method of determining sediment constancy and obtaining bottom material.

Water depths were obtained periodically with a PVC sounding pole marked in 0.1-ft intervals. Depths were recorded as actually measured in the field and later referenced to the Great Lakes International Datum (IGLD, 1985) as feet above or below Low Water Datum for Lake Erie (elev. 569.2 ft) using water level records

for the times of the soundings. Horizontal control for fluctuations in water level were obtained from the NOAA water level gauge located at Marblehead, Ohio, about 5 mi (8 km) south of the study site (Figure 4-6).

Because water clarity was less than favorable, about 5 to 7 ft (1.5 to 2 m) visibility, direct diver observations were supplemented with sonar profiles using a Lowrance X-16 depth sounder fitted with a 20° cone transducer to determine the presence of submerged objects. Additionally, the author participated in a broader-based side-scan sonar survey of cultural resources in the waters surrounding Kelleys Island in cooperation with the Ohio Division of Geological Survey in 2003 (Figure 4-7). The Division's research vessel GS-3, equipped with a Klein Associates Model 595 side-scan sonar unit interfaced with a Trimble Model 212 GPS positioning system (Figures 4-8 and 4-9), was used for the 4-day survey. This survey included the Lake Erie nearshore bottom off the Predevelopment, Ltd. property on Long Point.

No significant, unknown, cultural objects were discovered, with the exception of the derelict hull of a modern fiberglass motorboat, which was documented and its position mapped. Because State of Ohio law (ORC 1506.30–1506.99) precludes the collection of cultural artifacts from the bed of Lake Erie (without a permit), no cultural objects were removed or disturbed during the survey.

Information was also recorded as to the physical and biological setting along each transect line, any noteworthy features were further documented (e.g. glacial features, unusual glacial-erratic boulders, submerged aquatic vegetation, fish spawning sites, wave-built shoreline features, etc.). This information was used to assess the appropriateness of the engineering design for the particular setting of the docking facility.

Based on an analysis of water depths, wave climate, ice conditions, bottom material, and other littoral processes, an assessment was made as to the effects and/or impacts of the construction and presence of the proposed docking facility structure on all known or newly discovered shipwrecks and other submerged cultural and natural resources within the survey area. Secondly, an assessment was made as to the anticipated effects of operating the proposed docking facility on the uses of the shipwrecks by recreational divers,

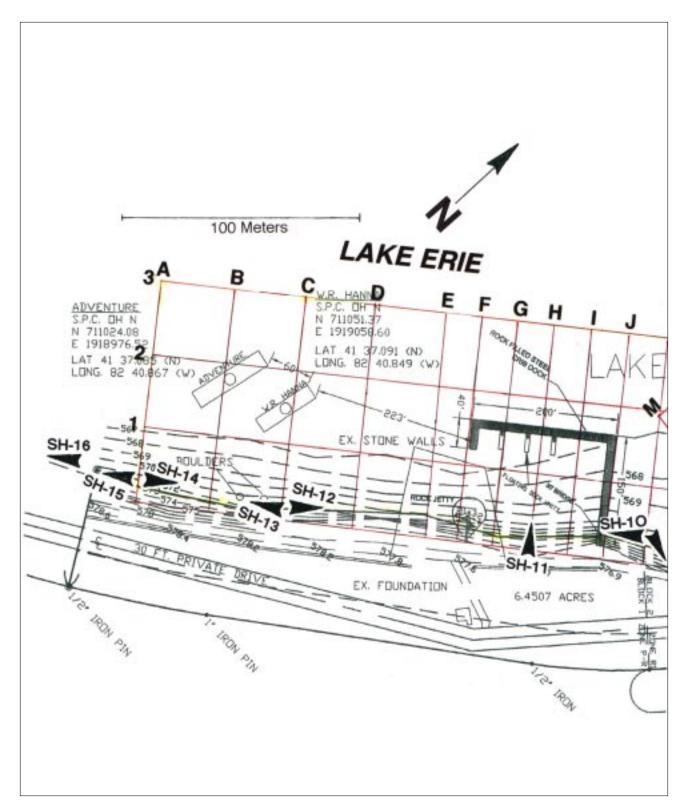


Figure 4-5. Map of the nearshore waters of Lake Erie at the project site, showing the location of submerged cultural resources survey transect lines and Appendix D photographs.

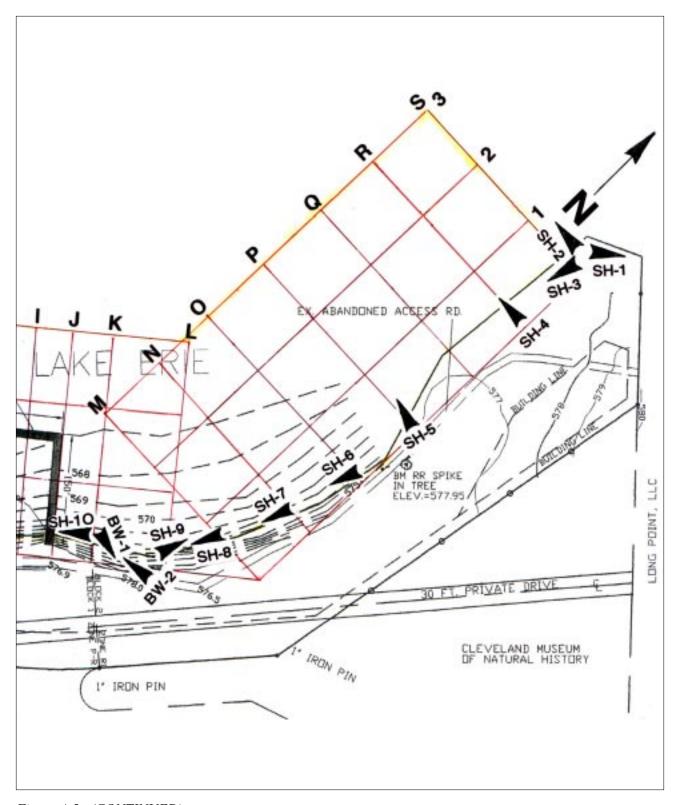


Figure 4-5. (CONTINUED).

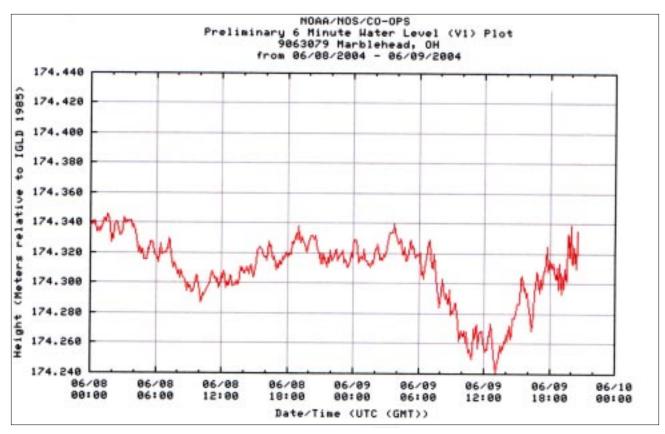


Figure 4-6. Lake Erie water levels during the submerged cultural resources survey, June 8, 2004 (NOAA water level gauge, Marblehead, Ohio).

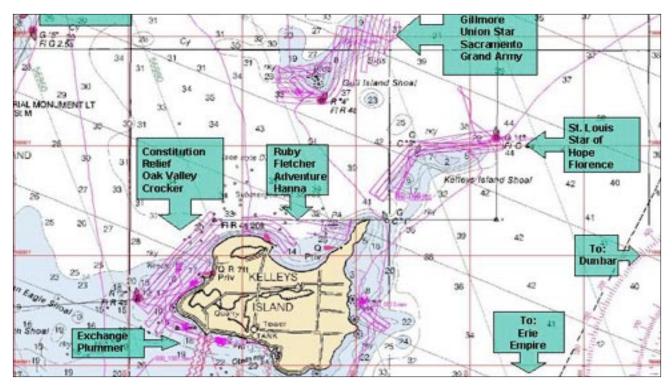


Figure 4-7. Map of the Kelleys Island region of Lake Erie, showing reported shipwrecks targeted for side-scan sonar survey (courtesy ODNR, Division of Geological Survey).



Figure 4-8. ODNR, Division of Geological Survey research vessel GS-3 used to conduct side-scan sonar survey of Kelleys Island region (August 13, 2003).



Figure 4-9. Klein Associates Model 595 side-scan sonar unit aboard the GS-3, showing a record of the Lake Erie bottom in the vicinity of Kelleys Island (August 13, 2003).

educational training programs, and fishing pursuits, as well as, possible adverse impacts to the shipwrecks themselves (e.g. effects of increased boat traffic, vessel discharge, and navigational buoys).

LABORATORY METHODS

PREHISTORIC ARTIFACTS

Lithic (stone) artifacts that show signs of human chipping were found in nearly all of the test pits excavated within the Building Envelope, but in none of the those excavated at the historic sites. The approach of the project was to perform a three-level analysis of lithic artifacts obtained from the Building Envelope: (1) morphological, (2) technological, and (3) functional. This approach provides insight as to the location and techniques of tool making, patterns of the tool use, raw material procurement and use, and temporal separation of various cultural components that may be present at a site.

After cleaning, all of the lithic artifacts were sorted morphologically into classes, such as cores, implements, and debitage. A core is a piece of stone from which flakes or blades have been chipped away to form tools. Implements (tools) and debitage are chipped stone products and by-products of the manufacture of stone tools produced by percussion and/ or pressure-flaking techniques. Debitage refers to the waste material generated in the process of tool making. Chipped stone exhibits at least one of the following attributes: flake scars, striking platforms, or bulbs of force. Because only cores and debitage were found in the Building Envelope test pits, the analysis was limited to what could be interpreted from the classes of debitage present, these included:

- 1. Checked Pebbles—pebbles or cobbles redeposited away from their natural source that have one or more flakes removed, presumably for the purpose of checking the interior quality of the material; cortex (outer layer) of these nodular stones is typically hard, rounded, or patinated due to transport.
- 2. Flake Cores—free-hand, multifaceted cores specifically prepared for the purpose of obtaining flakes as an end product; these cores contain flake scars removed in an unsystematic manner and lack a specially prepared platform.

- 3. Core Debris—spent or exhausted cores that cannot be accurately classified as to specific core type.
- 4. Flake Fragments—indistinguishable flake segments.
- 5. Decortication Flakes—flakes that retain cortex on a significant portion of their dorsal face.
- 6. Primary Subcortical Flakes—flakes produced during the initial shaping of tools or cores; they exhibit a single triangular platform (cone at point of contact).
- 7. Secondary Subcortical Flakes—flakes that are produced during the intermediate tool or core shaping process; they are typically longer than wider and exhibit a single lenticular platform.
- 8. Miscellaneous Flakes and Core Debris—angular and blocky fragments that lack any evidence of a platform or flake scars.

HISTORIC ARTIFACTS

Test pit excavations at the historic sites (Lincoln House foundation and isolated cistern) yielded numerous cultural artifacts. Each item was cleaned, measured, and classified as to its material and function. Analysis of these artifacts can reveal the time period of the occupation, type of construction, use of various rooms within the dwelling, and the activities that took place at the site. The most ubiquitous artifacts were square headed and stemmed nails of various lengths. High concentrations of ceramic items (pottery objects made from clay, including china) were associated with specific locations at the Lincoln House Site. Few cultural objects were found at the isolated cistern.

CURATION

All artifacts recovered during the Phase 1 Cultural Resources Survey of the Predevelopment, Ltd. property on Long Point, Kelleys Island, Ohio have been cataloged and stored in marked containers in the laboratory of EcoSphere Associates, Sheffield Village, Ohio. A total of 636 artifacts will be temporarily held in this facility until final ownership is established. If the landowner does not wish to exercise ownership and executes a legal waiver to that effect, EcoSphere Associates will attempt to find an appropriate facility for curation of the material within the State of Ohio.